

GISELLA REBAY - CURRICULUM VITAE

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UNIVERSITY EDUCATION AND ACTIVITIES

Laurea in Geological Sciences, July 1993, Università Statale di Milano, (106/110). Final dissertation in structural geology on the subject: "*Structural relations among the metamorphic complexes of the South-alpine basement of the Orobic Alps and their relationship with the sedimentary cover (upper Val Camonica, Central Southern Alps, Italy)*".

Dottorato di ricerca (PhD) in Earth Sciences, June 1997, at Università di Pavia. Thesis in petrology, title "*Tectono metamorphic evolution of the Corio and Monastero gabbro, southern Sesia-Lanzo zone, Western Alps*".

Status and activity at Università di Pavia

1993-1996	PhD Scholarship (Italian Ministry of Education).
1997	temporarily engaged (two months) by contract to complete data analyses on Sesia Lanzo metagabbros at the Department of Earth Sciences.
01/04/1999 to 30/10/2001	post-doctoral researcher , by contract. Research theme: " <i>Metamorphic evolution and thermodynamic modelling of high pressure metabasic rocks from the Western Alps</i> ". Collaboration with Prof. B. Messiga.
01/11/2001 to 30/04/2020	full-time position as Researcher in Petrography and Petrology (GEO/07), implying involvement in research and teaching activities, fund raising and administrative responsibilities.
from 01/05/2020	full-time position as Associate Professor in Petrology (GEO07), Università di Pavia

Activity with the Italian National Research Council (CNR)

1998	Involved by contract in a joint project D.S.T.N. (Dipartimento per i Servizi Tecnici Nazionali), S.G.N (Servizio Geologico Nazionale), C.N.R. (Centro Nazionale delle Ricerche) for the production of a 1:10.000 metamorphic map of ophiolitic units (Voltri Group - Western Alps).
2000	Involved by contract in the same joint project to coordinate the conclusive activities leading to the final draft of the 1:10.000 map, of a 1:50.000 interpretative map, and of the final report and notes.

Activities at the Université Paris VII and IPGP (Institut de Physique du Globe de Paris)

10/01/1999 – 30/11/1999	post-doctoral researcher , scholarship of the French Gouvernement. Project: " <i>Petrology of eclogitised ophiolitic metagabbro, Crepin,</i>
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Valtournanche". Laboratoire de Pétrologie, collaboration with Prof. J.R. Kiénast.

01/06/2001 to 28/02/2002 **post-doc researcher**, with a grant by the Italian CNR (from 1/11/2001 visiting researcher from Pavia University). Project: "*Petrology of an eclogitised fossil oceanic hydrothermal system, Western Alps*". Laboratoire des Géosciences Marines, collaboration with Prof. J.R. Kiénast and G. Godard.

Activities at the University of Melbourne

1999 **visiting post-doc** (from France), 5 months, the Metamorphic Studies Group, collaboration with Prof. Roger Powell. Field assistant to 3rd year field course to Broken Hill.

04/01/2008 to 04/04/2008 **invited scientist**, School of Earth Science, The University of Melbourne.

23/12/2009 to 23/02/2010 **invited scientist**, School of Earth Science, The University of Melbourne.

10/12/2011 to 31/01/2011 **invited scientist**, School of Earth Science, The University of Melbourne.

Activities with BRGM (Bureau de Recherches Géologiques et Minières) - France

1993 **stage** of two months. Project: "*Petro-structural analysis of the Tanneron Massif, France*". Supervision: Dr. Claude Delor.

2004 – 2006 **field work** for the official mapping of the 1:50.000 *Palluau sheet* of the French Geological map (responsible Dr Gaston Godard and Dr Philippe Rossi).

SCHOLARSHIPS

- 1993-1996 - **Scholarship** for PhD by the Italian Ministry of Education.

- 1994 - **Scholarship** C.I.E.S. (Centre International des Etudiants et Stagiaires) for a field stage at BRGM (Bureau de Recherches Géologiques et Minières), Orléans, France.

- 1999 - **Scholarship** of *11 month* by the French Government (scientific cooperation Italy-France), at Laboratoire de Pétrologie, URA736, Université Paris VII and the University of Melbourne.

- 01/04/1999 to 30/10/2001 **Post-doc Scholarship** ("*Assegno di ricerca*"), Pavia University.

- 2001 – **Scholarship** by the CNR to spend 1 year at the Laboratoire de Géosciences Marines, IPGP, Paris, France.

FUNDED RESEARCH PROJECTS

2001 – Funding of 20 millions lira (10.000 euros) in a CNR "young researcher" project (CNRG0087E4) on "Thermodynamic modelling of metamorphic reactions in the CNFMASH system (CaO – Na₂O – FeO – MgO – Al₂O₃ – SiO₂ – H₂O) and applications to basic eclogitic rocks from Western Alps (Italy).

2002 – COFIN (National projects founded by the Italian Ministry of research and University) – "Basic magmatism in the Europe-Adria system from Permian to Jurassic: petrology and geochemistry of gabbroic sequences of the Western Alps, Corsica and northern Appennines". Coordinator – Prof. Giorgio Rivalenti; local coordinator – Prof. Riccardo Tribuzio.

2003 – COFIN (National projects founded by the Italian Ministry of research and University) – "Evolution of the lithospheric mantle and melt-mantle interaction processes in rifting contexts". Coordinator – Prof. Giovanni Piccardo; local coordinator Prof. Riccardo Tribuzio.

2004 – COFIN (National projects founded by the Italian Ministry of research and University) – "Medieval glasses and glazes: production technology, analytical implications and modeling of the processes". Coordinator – Prof. Bruno Messiga.

2004 – 2006 Collaborator in the project of the 1:50.000 Palluau sheet of the French Geological map (responsible Dr Gaston Godard and Dr Philippe Rossi). Funds were awarded to conduct field work and for analytical and publication costs.

2005 – PRIN (National projects founded by the Italian Ministry of research and University) – “Structures and mechanisms of rifting, subduction, collision and exhumation of intermediate to deep crust in central-western Alps”. Coordinator – Prof. Incoronato; local coordinator – Prof. Guido Gosso.

2006 – scientific diffusion project (law 6/2000), in collaboration with the University of Pavia Mineralogy Museum and Multimedia Campus S.r.l. 20.000 Euro, to produce a CD-rom “Interactive voyage in the world of minerals and rocks”, winner of the third prize for e-content, sciences section, of the e-content award 2006 Italy.

http://www.econtentaward.it/2006/Press/Classifica_Finale.asp

2008 – PRIN (National projects founded by the Italian Ministry of research and University) – “Active tectonics mechanisms during lithospheric subduction: examples from alpine and appenninic complexes exhumed from different depths”. Coordinator Prof. Guido Gosso.

2011 – 2012 – I attracted funding from a private foundation for a post-doc scholarship of one year (extended for further 6 months) on the project “Deformation and metamorphism of high-pressure ophiolites in the Western Alps”.

2019 – 2022 – “I.E.S.MAN. - Internet of Enterprise Sustainable MANufacturing - Sviluppo di un modello di Internet of Enterprise per la fabbricazione sostenibile per inchiostri, smalti e piastrelle ceramiche”; DM 05.03.2018 – N. progetto: F/160032/01-04/X41 – Capofila Smalticeram Unicer SpA. Responsabile locale: Prof. Maria Pia Riccardi.

Sviluppo di un modello di Internet of Enterprise per la fabbricazione sostenibile per inchiostri, smalti e piastrelle ceramiche

2020 – PRIN (National projects founded by the Italian Ministry of research and University) – “POEM-POligEnetic Mélanges: anatomy, significance and societal impact”. Coordinator Prof. Michele Marroni. Local coordinator – Prof. Maria Iole Spalla.

2024 – 2026 – “VOLT - "VOLT | Viability fOr circuLar manufacTuring" - Progettare, realizzare e collaudare un digital twin come replica virtuale della supply chain, in grado di simulare le prestazioni del sistema di approvvigionamento dell'industria ceramica e di abilitare la transizione verso una più innovativa Circular and Intelligent Supply Chain., DM 31/12/2021 - N. progetto: F/310122/01-05/X56 – Capifila Gresmalt SpA. Responsabile locale: Prof. Maria Pia Riccardi.

ACADEMIC SERVICE / COMMUNITY OUTREACH

- 1995 – Participation in the organisation (participants, field excursion logistics, abstract volume organisation and printing) of International Ophiolite Symposium, Pavia, 18-23 September.
- 2002 – Organisation (scientific committee and logistics) of the international petrological school «Texture analysis and thermodynamic modeling of metamorphic rocks» sponsored by *Société Française de Minéralogie et Cristallographie* e *Società Italiana di Mineralogia e Petrologia*, Pavia (Italy), 15-21 September. This included finding the funds necessary for the organisation.
- Local coordinator of the project for the development of an international doctoral school in petrology ISPET (consortium among Italian, European and Australian Universities).
- from 2003 to 2023 – responsible for the management and instrument maintenance of the student petrography laboratory.
- from 2003 to 2023 – responsible for the students igneous and metamorphic rocks and thin sections collections.
- Production of a CD-rom on minerals and rocks within the framework of a program for the development of teaching tools and popularisation of Earth Sciences supported by the Italian

Ministry of University and Research (third prize in the e-science content of the e-content award 2006 Italy. http://www.econtentaward.it/2006/Press/Classifica_Finale.asp).

- 2009 – Organisation of the course “SC4 – Quantitative petrologic instruments to model equilibrium assemblages”, pre-congress course, Geitalia 2009, Rimini, September 2009.
- since 2017 - Member of the scientific committee for the Centro Linguistico di Ateneo
- From 2016 to 2022 - Responsible for the Erasmus Program for the “Natural Sciences” curriculum. Responsible of the erasmus for the department for three years.
- From 2022 - President of the commissione paritetica di Tutorato
- evaluation of petrology projects for various Italian Universities.
- Member of the PhD school committee – 2011-2012 and 2023 to present

FIELD TRIP ORGANISATION AND INTERNATIONAL MEETINGS

- 2005 – Field leader, together with Silvana Martin and Gaston Godard, of the excursion Field Trip B02, International Geological Congress, Firenze 2004, 48pp.
- 2007 – Organiser and leader, together with Gaston Godard (Paris) and Michel Ballèvre (Rennes), of the Post-conference Field Excursion (with field guide) of the 8th International Eclogite Conference, July 2007.
- 2013 – Organiser and field leader, 10th International Eclogite Conference, July 2010, Courmayeur. Member of the scientific committee and of the jury for the best poster nomination.
- 2017 – Field Logistics, 12th International Eclogite Conference, July 2017, Are, Sweden. Member of the scientific committee and of the jury for the best poster nomination.
- 2022 – Organiser and field leader, together with Michele Zucali, Daniele Castelli, Silvana Martin, Philippe Agard of the 14th International Eclogite Conference, July 2022.

Editorial Activity

- Editor del Volume: Zucali M., Fontana E., Zanoni D., Spalla M.I., Rebay G., Tartarotti P. & Gosso G. (2013): Note brevi e riassunti della Riunione Annuale del Gruppo di Geologia Strutturale. Rendiconti Online della Società Geologica Italiana, Milano 28 – 30 October 2013. Volume 29. ISSN 2035-8008.
- Membro dell’Editorial Review Board del Journal of Metamorphic Geology, 2013-2015.
- Associate editor dello Special Issue of GEOLOGICAL MAGAZINE, “Birth and death of oceanic basins: geodynamic processes from rifting to continental collision in Mediterranean and circum-Mediterranean orogens”. Guest Editors: Giovanni Capponi, Andrea Festa and Gisella Rebay. Pubblicato nel febbraio 2018.
- Dal 2017 al 2019 Review Editor, Editorial Board of Petrology of Frontiers in Earth Science.
- Reviewer for: “Journal of Metamorphic Geology”, “Ofioliti”, “Journal of African Sciences”, “Mineralogy and Petrology”, “Journal of Structural Geology”, “Periodico di Mineralogia”, “Gondwana Research”, “International Journal of Earth Sciences”, “LITHOS”, “Geological Society of London – Special publications”, “Italian Journal of Geosciences”, “Minerals”.

TEACHING ACTIVITY

Courses and demonstrations

Undergraduate

- 1997 – 2000 – Several cycles of seminars for the course “Laboratory of petrography”, “Petrography”, “Petrology” and “English Language for Geologists”.
- 2002/03 **course** “Introduction to the geological sciences”, first year students of Geology, 1.5 credits (12 hours), Università di Pavia.
- from 2002/03 to 2004/05 **course** “Complements of geochemistry, mineralogy and petrology”, third year students of Natural Sciences, 2 credits of “Petrology”, Università di Pavia.
- 2002 –**10 hours** course for Maitrise students, “Diagrammes de phases, les lire et les calculer en utilisant THERMOCALC”, Université Paris VII, Paris, France.
- From 2001/02 to 2010/11 **course** “Geological materials laboratory”, second year students of geology, 3 credits, Università di Pavia. In 2005/06 course changed to “ Microscopic Petrography Laboratory”, 3rd year students, 3 credits.
- From 2003/04 to 2011/12 **course** “Petrography and Petrography Laboratory”, second year students of Geology, 3 credits on metamorphism, Università di Pavia.
- From 2005/06 to 2010/11 **course** “Regional Petrography” third year students of Natural Sciences, 4 credits, Università di Pavia.
- From 2005/06 to 2006/07 **course** “Regional Petrography”, third year students of Geology, 3 credits, Università di Pavia.
- From 2011/12 to 2013/14 course “Laboratory of Petrography” for Natural Sciences.
- Since 2013/14 – Course Minerals and rocks”, Module “Rocks”, 6 cfu, second year students of “Natural Sciences”

Graduate and post-graduate

- 2002/03 to 2004/05 teacher of part of a course (“Geomaterials”, 2 credits) for a first degree masters in Material Sciences, Università di Pavia.
- 2002 – Responsible for the **pracs session** of the course "THERMOCALC workshop: calculating metamorphic Phase equilibria”, 4-6 Settembre 2002, Bellaterra, Barcellona, Spain. This course was directed to PhD students and scholars interested in the use of thermodynamic modelling of equilibrium assemblages in metamorphic rocks.
- 2002 – Invited **lecture** "Metamorphic evolution of chloritoid-metatroctolites from Western Alps” during the international school of petrology “Texture analysis and thermodynamic modeling of metamorphic rocks”, Pavia, 15-21 september 2002.
- 2003/04 to 2004/05 **course** “Basamenti cristallini” (Cristalline basements), II level, fourth year students of geology, 3 credits on metamorphic rocks and phase diagrams, Università di Pavia.
- 2003 – Responsible for the **pracs session** of the course “Petrological thermodynamics”, ETH Zurich, Switzerland. This course was directed to PhD students and scholars interested in the use of thermodynamic modelling of equilibrium assemblages in metamorphic rocks.
- 2004 – Responsible for the **pracs session** of the course “Thermobarometry Short Course”, ETH, Zurich, Switzerland, course was directed to PhD students and scholars interested in the use of thermodynamic software THERMOCALC in their research.
- 2004 – Invited **lecture** “P-T-X sections for high pressure rocks” at the “Third ISPET Doctorate School – High and ultrahigh pressure metamorphism: a window on subduction processes”, Monte Ortone, June 20-25.

- 2020/21 – Petrology of crystalline rocks: the Alpine orogen. 6 credits, LM in Geology.
- 2021/22 to 2022/23 – Petrology and geology of the Alpine chain. 6 credits, LM in Geology.
- Since 2022/23 – The story of the planet as told by rocks, 6 CFU, LM “Didattica e comunicazione scientifica”, Natural sciences.
- 2016 - PhD course on “Petrologia del subsolidus: modellizzazione termodinamica” University of Milano, 4 CFU
- 2018 - PhD course on “Petrologia delle Rocce metamorfiche: Modellizzazione Termodinamica utilizzando THERMOCALC”, 21-24 Maggio (12 hours of lectures + 12 hours labs)

Invited Lectures

- 2001 – **Invited lecture**, " Mapping metamorphic ophiolitic units: an example from the Voltri Group – western Alps", Università di Milano.
- 2003 – **Invited lecture**, "Metatroctolites from the western Alps: from microstructures to thermodynamic modelling", Charles University, Prag, Tchech Republic.
- 2006 – **Invited lecture**, “On the footsteps of chloritoid: an high-pressure rocks tale”, Università di Milano.
- 2008 – **Invited lecture**, “ The Vendee eclogite-facies unit (Armorican Massif, France) “, the University of Melbourne.
- 2012 - **Invited lecture**,” On the metamorphic ophiolites of the western Alps: 40 years after the Penrose Conference”, SGI meeting, Arcavacata di Rende.
- 2017 - **Invited lecture**, 12th International Eclogite Conference, July 2017, Are, Sweden

Students supervision

From 1993, when I was codirector of diploma field works, I have been responsible or co-responsible in 6 third year final dissertations and 10 fifth year dissertations. I also have collaborated in various forms and proportions with 4 PhD students in Petrology to assess and solve research related to their theses and have supervised a PhD student. I have attracted external funds for a 1.5 years scholarship for a post-doc researcher.

Moreover I have been:

- Member of the jury of several tesi di Laurea (diploma thesis – 5 years graduation)
- Member of the jury for eight PhD theses nationally and internationally;
- Member of the jury commission for the exams of the following courses: Petrography, Petrology, Applied Petrography, Microscopy Laboratory, Geochemistry applied to cultural heritage, Minerals and rocks, geomaterials, of the faculty of Sciences, Geological Sciences and Natural Sciences departments, and of the Faculty of Letters, Cultural Heritage Department.
- Member of the jury commission for the defence of diploma thesis (usually I participate to 2-3 sessions per year) for the Earth Science “Laurea” (Diploma, formerly 5 years, now 3 + 2 years).
- Currently I am a member of the PhD school in Earth Sciences of the department.

RESEARCH ACTIVITY AND INTERESTS

Although I am primarily a petrologist, my research interests necessarily spread to structural geology, geochemistry and the applications of these basic disciplines. I follow a multidisciplinary approach blending together techniques of structural geology and petrology with the modelling of equilibrium assemblages of complex geologic systems, in order to analyse complex metamorphic terranes, especially collisional orogenic belts.

My present research interests can be summarised as follows:

- Petrological study of high pressure rocks with two main goals:
 - the determination of the mechanisms and metamorphic conditions acting in metabasic coronitic rocks;
 - the determination of the PT(t) paths of tectonic units from collisional zones of different ages (Alps, Armorican Massif) integrating structural and petrologic studies.
- Thermodynamic modelling of equilibrium assemblages of metamorphic rocks, presently oriented in the investigation of the role of rock composition on the formation of different equilibrium assemblages, and of the study of ultramafic metamorphosed rocks.
- Problems linked to the cartographic representation of complex metamorphic units.
- Study of High- and Ultra High- temperature rocks from Sweden and Norway in order to understand metamorphic reactions at high temperature and the crustal evolution of ancient orogens.
- Study of archeologic and industrial materials with petrologic methods.
- Problems related to a better use and exploitation of raw materials.
- Geological and man-made materials in Archaeology.

Referee for the following international journals:

“Journal of Metamorphic Geology”; “Ofioliti”; “Journal of African Sciences”; “Mineralogy and Petrology”; “Geological Society of London – Special publications”; “Journal of Structural Geology”; “Periodico di Mineralogia”.

Scientific Collaborations

- Dipartimento di Scienze della Terra, Università degli Studi di Milano, Italy, Prof Guido Gosso, Prof. Maria Iole Spalla, Prof. Michele Zucali, Prof. Davide Zanoni, Prof. Manuel Roda;
- Museum National d’Histoire Naturelle, Paris, France, Prof Michel Guiraud;
- BRGM, Bureau de Recherches Géologiques et Minières, Orléans, France;
- Structural and Metamorphic Group, School of Earth Sciences, the University of Melbourne, Melbourne, Australia, Prof Roger Powell;
- Dipartimento di Scienze della Terra, Università di Pisa